

Abstract of the Disclosure

A mass spectrometer is disclosed comprising an ion trap wherein ions which have been temporally separated according to their mass to charge ratio or ion mobility enter the ion trap. Once at least some of the ions have entered the ion trap, a plurality of ion trapping regions are created along the length of the ion trap in order to fractionate the ions. Alternatively, the ions may be received within one or more axial trapping regions which are translated along the ion trap with a velocity which is progressively reduced to zero.